LENGTH – WEIGHT RELATIONSHIP AND RELATIVE CONDITION FACTOR IN *OREOCHROMIS MOSSAMBICUS* (PETERS) OF BHIMA RIVER

A. N. Shendge

Department of Zoology, Tuljaram Chaturchand College, Baramati – 413 102, Maharashtra.

ABSTRACT

***Oreochromis mossambicus* (Peters), a common freshwater fish of Bhima river, has high economic value and considerable fishery importance. The length-weight relationship in the logarithmic way for this fish can be written as: Log W = - 4.50241627 + 2.884822741 log L . This is close to the cubic law indicating the isometric growth of the fish in its natural habitat. The correlation coefficient (r) was found to be 0.9865 which showed a good relationship between the two parameters. The mean relative condition factor (K_n) was 1.00 suggesting the well being of the fish.**

Keywords : *Oreochromis mossambicus*, length-weight relationships, relative condition factor

INTRODUCTION

Length – weight relationship studies in fishes are being done with a view to establish the relationship between length and weight for enabling the interconversions of these variables as required in setting up of yield equations for estimating population strength (Beverton and Holt, 1957) and also to measure the variation from the expected weight due to changes in the well- being which takes place in the life cycle of all fishes (Le Cren, 1951). A scrutiny of the relative condition factor at different body lengths can give valuable information regarding the maturation and spawning in the life span of the fish whereas a close look at the conditions at differe.. months may give definite clues regarding the breeding seasons. No attempt has, so far been made to study the length-weight relationship and relative condition factor of *Oreochromis mossambicus* from Bhima river, hence the present investigation was undertaken.

MATERIAL AND METHODS

A total of 532 specimens were collected from Bhima river near Bhigwan, Pune District during February 2004 to February 2005 and analyzed for the length-weight relationship. Standard body length and weight were taken for

estimation of length–weight relationship and relative condition factor. The equations used for the present estimations were followed according to Le Cren,(1951), and Boraey and Soliman, (1987).

The length-weight relationship of *Oreochromis mossambicus* was determined by using the equation $W=aL^b$ and its log-log transformation log W=log a + b log L. in the usual notations.

The relative condition factor of each size group was estimated by using the equation Kn = W / W'. Where W = observed weight and W' is calculated weight.

RESULTS AND DISCUSSION

The length–weight relationship calculated for *Oreochromis mossambicus* is presented in Fig. 1. The regression equation obtained is follows: Log W = - 4.50241627 + 2.884822741 log L.

The corresponding parabolic equation is as follows :

$W = 0.00003144732652 + Log^{2.8848}$

The correlation coefficient (r) between them is 0.9865.

The results indicate the ' b' value as close to cubic law (n = 2.88) showing isometric growth of *Oreochromis mossambicus* from Bhima river. Similar reports are available on many other fishes from Indian waters and abroad in which the isometric growth was observed in *Tilapia leucosticta* (Siddiqui, 1977), *Plotossus canius* (Sinha,1981), *Liza parsia* Babu and Neelakantan,1983), *Dormitator*

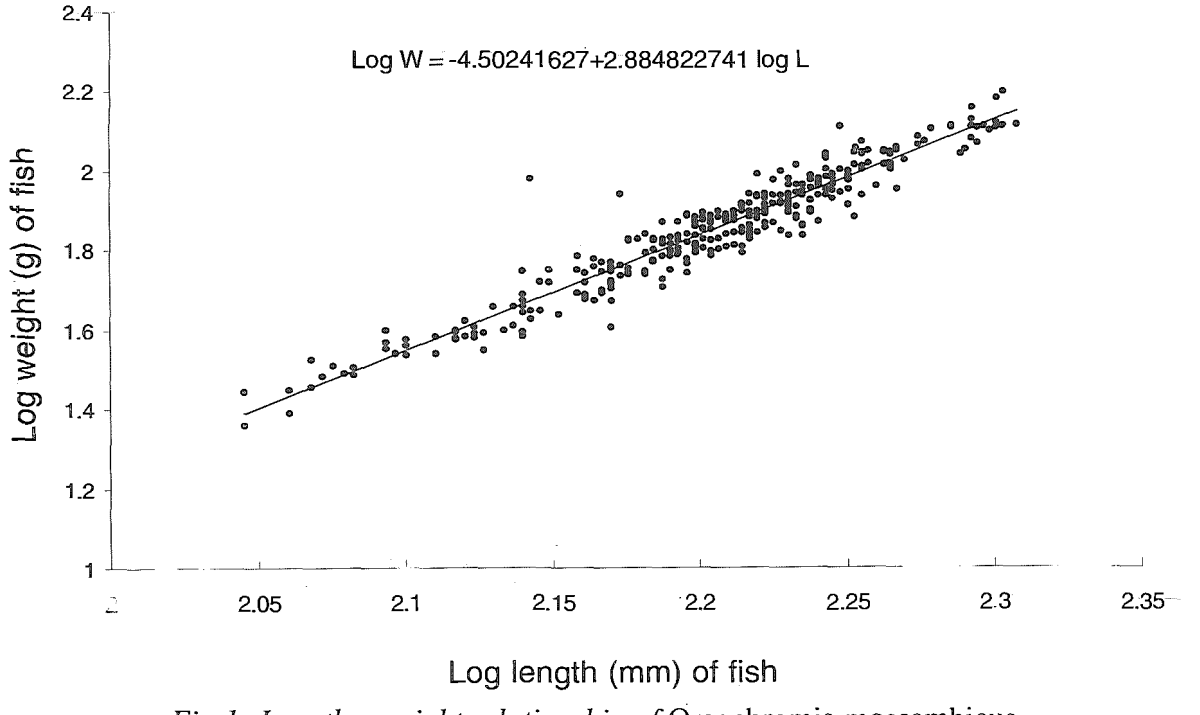

Fig.1: Length - weight relationship of Oreochromis mossambicus

latifrons (Chang and Navas, 1984), *Upeneus sulphureus* (Boraey and Soliman,1987), *Sparus sarba* (El-Agamy,1989), *Liza subuiridis* (Al-Daham and Wahab,1991), *Priacanthus hamrur* (Philip and Mathew, 1996), *Lates calcarifer* (Venugopal *et al.*, 2003) and *Epinephelus areolatus* (Alkahem *et al.*, 2003).

The fish under investigation occur in their fishery grounds regularly and substantially and by applying the previous equation on the collected data, the well–being of the fish was observed (Kn = 0.962455899 – 1.035312273; average 1.00798702) in its natural habitat and this also implies that food was not limiting in the river (Fig. 2). The relative condition factor is also reported in other fishes such as *Tilapia zilli* (Dadzie and Wangila, 1980), and *Upeneus sulphureus* (Boraey and Soliman, 1987). In the present study the reasons for the fluctuations in Kn value could be attributed to both the spawning and the feeding intensity. Similar reports are available on many other fishes from Indian waters and abroad eg. on *Johnius dussumieri* and *Johnius carutta* (Murty, 1979), and *Sparus sarba* (El-Agamy, 1989). On the contrary, in *Plotosus canius* (Sinha,1981) and in *Channa punctata* (Reddy and Rao, 1992), the fluctuations in relative condition factor resulted mainly due to changes in gonad conditions, while in *P. hamrur* (Philip and Mathew, 1996) the fluctuations in K_n values were mainly influenced by feeding intensity rather than the cyclic changes of the gonads.

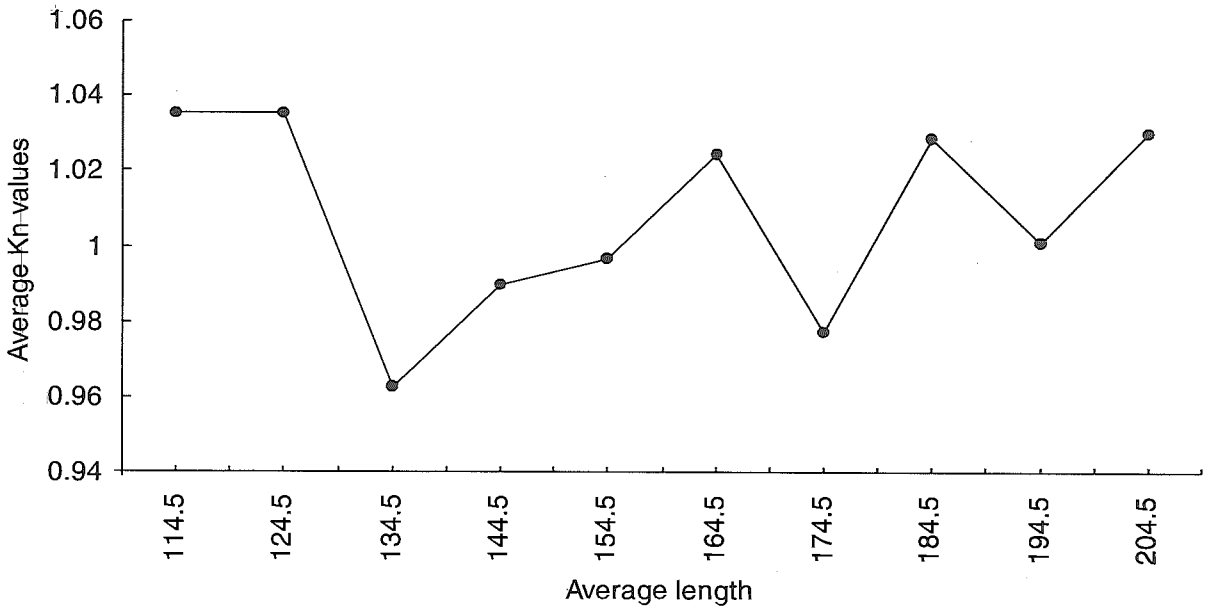

Fig. 2: Mean Kn values at different lengths in Oreochromis mossambicus

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